

REMARKS/ARGUMENTS

Reconsideration and withdrawal of the rejections of the application are respectfully requested in view of the amendments and remarks herewith, which place the application into condition for allowance. The present amendment is being made to facilitate prosecution of the application.

I. STATUS OF THE CLAIMS AND FORMAL MATTERS

Claims 1-3 are currently pending. Claim 1 is independent and is hereby amended. No new matter has been introduced. Support for this amendment is provided throughout the Specification as originally filed.

Changes to the claims are not made for the purpose of patentability within the meaning of 35 U.S.C. §101, §102, §103, or §112. Rather, these changes are made simply for clarification and to round out the scope of protection to which Applicants are entitled.

II. REJECTIONS UNDER 35 U.S.C. §103(a)

Claims 1 was rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent No. 5,548,415 to Tanaka et al. (hereinafter, merely “Tanaka”) in view of U.S. Patent No. 5,774,578 to Shimizu; and

Claims 2 and 3 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Tanaka and Shimizu and further in view of U.S. Patent No. 6,175,659 to Huang.

Applicants respectfully traverse these rejections.

Claim 1 recites, *inter alia*:

“a thin line image detecting section which determines the relevant pixel to be a thin line pixel forming a part of a thin line image,

...

wherein the object pixel detecting means determines that the relevant pixel is an object pixel when the density judgment section determines the relevant pixel to be a prospective object pixel, and the thin line image detecting section determines the relevant pixel to be a thin line pixel.” (Emphasis added).

Office Action asserts that Tanaka discloses the thin line image detecting section that determines the relevant pixel to be a thin line pixel forming a part of a thin line image, and determines the relevant pixel is an object pixel when the density judgment section determines the relevant pixel to be a prospective object pixel and the thin line image detecting section determines the relevant pixel to be a thin line pixel.

The Office Action points to Tanaka’s FIG. 12, element 5, as disclosing a thin line detection circuit that corresponds to the thin line image detecting section recited in claim 1. However, the Office Action misinterprets the functions Tanaka’s element 5. Tanaka fails to teach or suggest determining the relevant pixel is an object pixel when the density judgment section determines the relevant pixel to be a prospective object pixel and the thin line image detecting section determines the relevant pixel to be a thin line pixel.

Furthermore, although the Office Action admits that Tanaka does not disclose the density judgment section recited in claim 1, the Office Action asserts that Shimizu discloses a density judgment section. However, Shimizu fails to teach or suggest a density judgment section having the features recited in claim 1.

Claim 1 also recites, *inter alia*:

a density judgment section that determines the relevant pixel to be a prospective object pixel when the density of the relevant pixel is higher than a first threshold value, which is higher than the density of a background of the border of the original and not higher than the density of a thinnest line from among lines that form said characters, and when the density of the relevant pixel is not higher than a second threshold value, which is not lower than the density of the thinnest line from among lines that form said characters.”

The density judgment section recited in claim 1 determines whether the relevant pixel is a prospective object pixel, which is a candidate pixel to be subjected to edge enhancement processing. On the other hand, Shimizu only discloses judging whether an image is a photographic image, a black image in a white background, or a white image in a black background, based on a density histogram of the image. That is, the objective of judgment of the judgment method disclosed in Shimizu is completely different from the objective of judgment of the density judgment section recited in claim 1.

In addition, the Office Action asserts that the first density threshold value D_{thL} disclosed in Shimizu corresponds to the first threshold value recited in claim 1. The first threshold value recited in claim 1 is higher than the density of a background of the border of the original and not higher than the density of thinnest line from among lines that form the character. Meanwhile, the first density threshold value D_{thL} disclosed in Shimizu is higher than the density of a background of the original. However, Shimizu fails to teach or suggest that the first density threshold value D_{thL} is not higher than the density of thinnest line from among lines that form the characters. Therefore, the first density threshold value D_{thL} disclosed in Shimizu is completely different from the first threshold value recited in claim 1.

The Office Action also asserts that the second density threshold value D_{thH} disclosed in Shimizu corresponds to the second threshold value recited in claim 1.

The second threshold value recited in claim 1 is not lower than the density of the thinnest line from among lines that form the characters. However, Shimizu fails to teach or suggest that the second density threshold value D_{thH} is not lower than the density of the thinnest line from among lines that form the characters. The second density threshold value D_{thH} should rather be lower than the density of the thinnest line from among lines that form the characters, than be not lower than the density of the thinnest line from among lines that form the characters, since the frequency of the density of pixels that form the characters is distributed within a range which is not lower than the second density threshold value D_{thH} .

In addition, Shimizu fails to teach or suggest determining the relevant pixel to be a prospective object pixel, which is a candidate pixel to be subjected to edge enhancement processing, when the density of the relevant pixel is higher than the first threshold value and is not higher than the second threshold value.

Therefore, Shimizu does not disclose the density judgment section recited in claim 1, and it is impossible to achieve the invention of claim 1 by combining the teachings of Tanaka and Shimizu.

The invention of claim 1 allows an image processing system to carry out edge enhancement processing on character image information so that small point characters can be sharply output within the contour of an original being out by using both the density judgment section and the thin line image detecting section.

In contrast, Tanaka and Shimizu taken alone or in combination fail to teach or suggest the object that the small point characters can be sharply output with the contour of an original being output.

Even if Tanaka discloses a feature that corresponds to the thin line image detecting section recited in claim 1 and Shimizu discloses a feature that corresponds to the density judgment section recited in claim 1, there is no reason to combine these features.

Therefore, the invention of claim 1 is patentable over Tanaka and Shimizu.

Regarding claims 2 and 3

Huang does not overcome the above-noted deficiencies in the disclosure of Tanaka and Shimizu. Therefore, claims 2 and 3 are patentable for at least the same reasons as claim 1 because they depend from claim 1.

CONCLUSION

Claims 1-3 are in condition for allowance. In the event the Examiner disagrees with any of statements appearing above with respect to the disclosure in the cited reference, or references, it is respectfully requested that the Examiner specifically indicate those portions of the reference, or references, providing the basis for a contrary view.

Please charge any additional fees that may be needed, and credit any overpayment, to our Deposit Account No. 50-0320.

In view of the foregoing amendments and remarks, it is believed that all of the claims in this application are patentable and Applicants respectfully request early passage to issue of the present application.

Respectfully submitted,

FROMMER LAWRENCE & HAUG LLP
Attorneys for Applicants

By: 

Paul A. Levy
Reg. No. 45,748
(212) 588-0800